

## MONITORING SYSTEM AND PROCESS FOR THE FOOD SERVICE INDUSTRY

BACKGROUND OF THE INVENTIONField of the Invention

This invention relates to a system and an attendant process for monitoring the operational performance of one or more sites, such as food service outlets, to assure a consistent pattern of compliance of the site with government and/or owner derived regulatory standards. A monitoring program is preferably utilized with a portable processor, operable at each site, and comprises specific applications intended to direct a user in the performance of tasks which are determinative of the existing conditions at a given site and their compliance or non-compliance with the predetermined standards.

DESCRIPTION OF THE RELATED ART

In many countries throughout the world, the food service industry is highly regulated in order to assure the safety and well being of patrons which frequent restaurants and other food service outlets. While it has been the intent and practice of those involved in the food service industry to maintain a uniformity of quality, a consistently high standard of performance in a variety of operational categories has not always been practiced. As a result some 70,000 people in the United States alone annually develop conditions of food

1 poisoning. Many of these incidents are directly attributable to  
2 poor quality control standards being practiced by restaurants,  
3 as well as other food service outlets.

4 As used herein, it should be noted that the term "food  
5 service outlets" is not intended to be interpreted in a limiting  
6 sense as relating only to restaurants and/or fast food  
7 establishments of the type operating under international  
8 recognized trademarks. To the contrary, food service outlets  
9 refers to a variety of different operating facilities which,  
10 while including fast food delivery establishments and  
11 restaurants, is also meant to include a variety of other  
12 privately operated or governmentally sponsored food service  
13 outlets. Food service outlets also include cafeterias and other  
14 food service facilities in prisons, hospitals, governmental  
15 agencies, as well as catering and other food preparatory  
16 services associated with the transportation industry.

17 The United States government has recently established a set  
18 of minimum government regulatory standards which affect the food  
19 service industry generally and in particular the thousands of  
20 food service outlets existing throughout the country. These  
21 regulatory standards mandate compliance with a predetermined set  
22 of quality control, performance and operational parameters.  
23 However of equal importance is the additional requirement to  
24 maintain records or data which clearly evidences a consistent  
25 pattern of compliance of the various food service outlets over

1 a period of time as well as the ability to provide documentation  
2 of such evidence. In addition to the above noted governmentally  
3 imposed standards, many of the "franchise outlets" operating  
4 under a common network of ownership and trademark recognition  
5 are contractually required to implement owner/controller  
6 standards which commonly exceed and/or otherwise differ from the  
7 standards required by the government.

8 Nevertheless problems still persist in the food service  
9 industry which relate not only to preparation and serving of un-  
10 safe food products but also to a lack of acceptable performance  
11 in a number of other operational categories. Therefore,  
12 monitoring of performance should also include, but not be  
13 limited to, the maintenance and cleanliness of the physical  
14 facilities, and appliances as well as a variety of other  
15 services, which detract from the safe operation of these  
16 outlets. Even when there have been significant attempts to  
17 comply with all regulatory standards, whether governmental or  
18 contractually derived, problems of providing evidence of a  
19 consistent pattern of such compliance has been extremely  
20 difficult.

21 One factor associated with the difficulty in establishing  
22 a consistently high standard of performance is the inability to  
23 effectively monitor operational standards at the literally  
24 thousands of food service outlets throughout the country.  
25 Commonly practiced monitoring techniques are relatively

1 antiquated due to the recording and maintenance of various  
2 performance parameters using paper or hard copy records. Proof  
3 of a high quality performance is thereby rendered difficult  
4 since evidence of such performance, over a significant length of  
5 time, is frequently not possible. In more simplistic terms hard  
6 copy records evidencing the maintenance of high performance  
7 standards at a large number of food service outlets may be kept,  
8 recorded and stored. However, their effective retrieval,  
9 utilization and production when required may be almost  
10 impossible.

11 Therefore there is a long recognized and significantly  
12 important need in the food service industry for a monitoring  
13 system and attendant process which assures that existing  
14 conditions in any of a large number of operational categories  
15 are continuously and consistently maintained. In addition, such  
16 an improved system and process should be sufficiently versatile  
17 to require and direct specific correctional actions to be taken  
18 in the event that certain existing conditions are below  
19 acceptable performance standards. In addition, such an improved  
20 system should incorporate a process which is sufficiently  
21 versatile to easily provide for the change, addition or deletion  
22 of any number of operational categories being monitored. The  
23 improved monitoring system should be specifically adaptable to  
24 the operational and physical facilities of a single outlet or a  
25 large number of outlets, such as franchised food outlets,

operating under common guidelines.

Finally, a preferred and improved monitoring system and process should be capable of quickly and efficiently producing "result records" which may be entered, stored and otherwise processed in a manner which facilitates their availability in evidencing a consistent pattern of compliance over a predetermined length of time. Also, such evidence should be readily available in hard copy or document form in order to fully comply with the requirements of either government or owner derived regulatory standards.

#### SUMMARY OF THE INVENTION

The present invention is directed to a system and an associated process for monitoring the operation and performance of at least one, but more practically, a plurality of sites or outlets which are involved in the food service industry. More importantly the actual conditions which exist at a given site can be reviewed on a timely basis to ensure that the performance of the site is being continuously maintained in accordance with certain predetermined standards. The food service industry, being a highly regulated area of commerce, is subject to regulatory requirements derived by the federal and/or local government. In addition a plurality of outlets such as, but not limited to "franchise food" operations may be contractually obligated to operate under performance and operational standards

1 determined by the "owner/operator" of the franchise company.  
2 Further, in the event that a food service site has one or more  
3 operational categories which do not comply with the  
4 predetermined standards, the monitoring system and process of  
5 the present invention expeditiously determine such non-  
6 compliance and offer or require corrective actions to be taken  
7 by authorized personnel when applicable.

8 Another important feature of a preferred embodiment of the  
9 system and process of the present invention is the ability to  
10 collect and store data. This in turn provides, over  
11 substantially any period of time, clear and convincing evidence  
12 that a pattern of compliance has been maintained with each of  
13 the one or more food service sites being monitored. The  
14 importance of this capability is based on the federal  
15 government's mandate of requiring documented proof of a  
16 consistent pattern of compliance with pre-set standards over a  
17 period of time. Customers can thereby rely on a consistent  
18 level of quality in the food being served, as well as the  
19 overall performance and operation of the site which is visited.

20 Accordingly, one preferred embodiment of the system and  
21 process of the present invention incorporates the utilization of  
22 a processor assembly intended to be operable at each of the  
23 sites being monitored. Preferably, the local processor assembly  
24 is portable and may comprise the handheld, personal digital  
25 assistant (PDA) hardware. Such devices incorporate a

1 significant amount of memory, a visual display in the form of a  
2 display screen and may be adapted or modified to include a  
3 plurality of different input facilities.

4 The input facilities allow the personnel or "user" to enter  
5 required or requested "user responses" either manually or  
6 automatically. In the latter category the required user  
7 response may be in the form of a specific numerical value, such  
8 as the temperature of the food being cooked and/or the plurality  
9 of appliances used in the preparation and storing of the food  
10 being presented. As will be explained in greater detail  
11 hereinafter, a temperature acquisition module or "TAM" is  
12 interfaced to communicate directly with the local processor  
13 assembly. The TAM may include a variety of different  
14 structures, such as temperature sensing probe assembly of the  
15 type manufactured and made commercially available by ATKINS  
16 TECHNICAL, Inc.

17 Another important feature of the preferred embodiment of  
18 the monitoring system and process of the present invention is  
19 the development and incorporation of a monitoring program  
20 specifically designed to facilitate the expeditious review of  
21 the operation of each of one or more food service sites. More  
22 specifically, the monitoring program facilitates the detailed  
23 review of a plurality of "operational categories" which have  
24 been predetermined by the owner or by any other authorizing  
25 entity. The operational categories should be sufficiently

1 comprehensive to comply with all of the government and/or owner  
2 derived regulatory standards under which the food service site  
3 is required to operate. Moreover, the monitoring program is  
4 designed to include a plurality of program applications which  
5 collectively allow for the expedient monitoring of the quality  
6 control and performance of the operational categories involved  
7 in the everyday functioning of the one or more food service  
8 sites.

9 One such program application is herein referred to as a  
10 task application and comprises at least one but more typically  
11 a plurality of user interactive "test items". The plurality of  
12 test items are designed to review, in significant detail, each  
13 of the procedures associated with each of the operational  
14 categories which are included within the overall monitoring  
15 procedure. Further, each of the test items, as performed and/or  
16 reviewed by the user, requires a user response which is  
17 indicative of the actual conditions associated with the specific  
18 test item being reviewed. The resulting user responses are by  
19 virtue of the operation of the monitoring program, compared  
20 with the predetermined standards, also incorporated into the  
21 program. The user may thereby instantly determine whether or  
22 not the test item being reviewed is within acceptable  
23 performance parameters of the aforementioned predetermined  
24 standards.

25 Another feature of at least one preferred embodiment of the



1 present invention comprises the inclusion of a corrective  
2 application in the monitoring program. The corrective program  
3 application provides for the immediate communication to the user  
4 of one or more corrective actions which should be undertaken, if  
5 applicable, to bring the one or more existing conditions  
6 associated with the individual test items back into compliance  
7 with the acceptable performance parameters as defined by the  
8 predetermined standards.

9 A plurality of other program applications are also  
10 incorporated into the monitoring program. These cooperatively  
11 designed applications further serve to maintain the operation  
12 and performance of the one or more food service sites in  
13 compliance with the predetermined standards on a consistent  
14 basis. Such additional program applications include scheduling  
15 and/or timing applications which indicate or provide a periodic  
16 schedule when the various user interactive tasks should be  
17 performed. In certain instances it will be preferable for the  
18 user to perform the indicated test items in a predetermined  
19 sequence. Directly associated therewith is the provision of an  
20 alert application. An alert or signal is thereby provided  
21 through the workings of the local processor indicating to the  
22 user or other responsible personnel that performance of  
23 scheduled tasks has been missed or is late or is performed out  
24 of sequence.

25 In order to assure that the predetermined standards under

1 which the food service industry operates are met, another  
2 important feature of the system and attendant process of the  
3 present invention is the establishment of "result records". The  
4 result records are comprised of data derived from a collection,  
5 storage and processing of the various user responses provided by  
6 responsible personnel at the one or more food service site. As  
7 such, the user responses are clearly indicative of existing  
8 conditions at the one more sites being in compliance with the  
9 predetermined standards. Compliance is assured by virtue of the  
10 fact that any test item found to be outside of the acceptable  
11 performance parameters, as determined by the aforementioned  
12 predetermined standards, is brought back into compliance by the  
13 user following the aforementioned corrective actions.

14 Accordingly, the result records, after being collected are  
15 initially stored in the local, portable processor assembly or  
16 PDA and eventually transmitted to a control facility. The  
17 control facility may represent the owner's head quarters,  
18 operational center, data processing center, etc. In addition,  
19 the control center further comprises the provision of a central  
20 processor having sufficient capabilities to store and process  
21 the result records received from each of the one or more food  
22 service sites. The processing of all of the result records are  
23 accomplished in a manner which clearly evidences a pattern of  
24 compliance with the predetermined standards.

25 Therefore, the monitoring system and process of the present

1 invention will allow a user to run scheduled and unscheduled  
2 procedures relating to specific operating categories. These  
3 monitoring procedures comprise multiple user interactive test  
4 items. Some or all of the test items require a user response  
5 indicative of compliance or non-compliance with predetermined  
6 standards, which are derived from the government, food service  
7 industry or the owner/controller of the food service sites being  
8 monitored. The user responses are recorded, and processed to  
9 provide evidence that the predetermined standards, such as those  
10 originating with the Food and Drug Administration and include  
11 the Hazard Analysis and Critical Control Point (HACCP)  
12 guidelines, are in fact met. Implementation of the system and  
13 process of the present invention is based, to a significant  
14 extent, on the design and utilization of the monitoring program  
15 installed in each of the plurality of locally operable processor  
16 assemblies by a host computer or PC also located at each of the  
17 individual food service sites being monitored.

18 More specifically, the user will initially prepare the  
19 system, including the monitoring program by syncing it with a  
20 host computer to download a plurality of operational categories  
21 along with a test application included as part of the program.  
22 The test application is comprised of a plurality of user  
23 interactive test items representing individual procedures to be  
24 performed in order to assure compliance with the aforementioned  
25 predetermined standards. All user responses will initially

1 reside in the database of the local, preferably portable  
2 processor assembly for eventual transfer to the host computer  
3 and/or a central control facility to be processed to the extent  
4 of providing evidence, which may be in the form of appropriate  
5 documentation, of a consistent pattern of compliance of the one  
6 or more food service outlets being monitored.

7 Accordingly, the monitoring system and accompanying process  
8 of the present invention provide an efficient and expeditious  
9 procedure for assuring that the performance and operational  
10 characteristics of anyone of a plurality of food service sites  
11 are within the acceptable parameters determined by government  
12 and/or owner regulatory requirements, herein referred to as the  
13 predetermined standards. Moreover, the system and process of  
14 the present invention eliminates the burden of voluminous  
15 quantities of hard copy record keeping and are an efficient  
16 means of providing evidence, which may be required to be  
17 documented, of a consistent pattern of compliance of each or all  
18 of one or more food service outlets over any applicable period  
19 of time. Further, the system and process of the present  
20 invention can be implemented at an extremely competitive cost  
21 and requires significantly less time for conducting the  
22 monitoring procedures than was previously possible using  
23 conventional systems. Further, the subject system and process  
24 can be implemented without extensive, specialized training of  
25 the user personnel.

1           These and other objects, features and advantages of the  
2           present invention will become more clear when the drawings as  
3           well as the detailed description are taken into consideration.  
4

#### 5           BRIEF DESCRIPTION OF THE DRAWINGS

6           For a fuller understanding of the nature of the present  
7           invention, reference should be had to the following detailed  
8           description taken in connection with the accompanying drawings  
9           in which:

10          Figure 1 is a graphical representation of the food service  
11          monitoring system of the present invention.

12          Figure 2 is a schematic representation of a downloading  
13          procedure between a host computer and a local processor assembly  
14          incorporated in the monitoring system and process of the present  
15          invention.

16          Figure 3 is a flow chart in block diagram form which is  
17          descriptive of the monitoring process associated with the  
18          preferred embodiment of the system of the present invention as  
19          disclosed in Figure 1.

20          Figures 4 through 15 are schematic representations of  
21          computer windows displayed on the local processor assembly  
22          associated with each food service site, wherein the various  
23          window displays demonstrate the procedural and operational  
24          applications incorporated in a monitoring program downloaded  
25          into each of the one or more local processor assemblies.

1 Like reference numerals refer to like parts throughout the  
2 several views of the drawings.

3  
4 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

5 As shown in the accompanying Figures, the present invention  
6 is directed towards a system and associated process for  
7 monitoring at least one but preferably a plurality of food  
8 service sites for purposes of assuring that each of the sites is  
9 operating in accordance with predetermined standards. The  
10 predetermined standards may be mandated by the federal or local  
11 government, may be accepted as industry wide standards or may be  
12 derived from a contractual obligation of the one or more food  
13 service site. Further, the system and method of the present  
14 invention is capable of obtaining, storing and processing result  
15 records which may be used as evidence of a consistent pattern of  
16 compliance with the applicable predetermined standards under  
17 which the various food service sites are required to operate.

18 A schematic representation of the system of the present  
19 invention is generally indicated as 10 in Figure 1 and for  
20 purposes of clarity comprises at least one but preferably a  
21 plurality of sites each indicated as 12 owned, operated or  
22 functioning under the auspices of an owner/controller, generally  
23 indicated as 14. Accordingly, the schematic representation of  
24 Figure 1 represents at least one preferred embodiment of the  
25 system and process of the present invention, wherein the

owner/controller 14 may be the franchise holder operating under a family of trademarks through a plurality of food service sites 12 located throughout the country or other geographical area.

It is emphasized however that the system and process of the present invention is not limited to "fast food" or the franchise segment of the food service industry. To the contrary, the present invention is applicable for monitoring and maintaining acceptable quality control and performance levels of any type of food service site including those operating in the private sector or other food service sites operated or sponsored by federal or local government. The latter category includes food service facilities associated with prisons, hospitals, schools, etc. and/or the transportation industry.

Accordingly, in one preferred embodiment of the present invention each of the food service sites 12 incorporates the use of a processor assembly generally indicated as 16 and which may be defined as a portable, handheld processor or personal digital assistant (PDA). Applicable hardware to be used could include, but is not intended to be limited to, one or more PDA models, of the type commercially available under the trademark Casio. By way of example only, the Casio Cassiopeia models EG-800 and E-115 are applicable for use as the local operating processor assembly in the implementation of the system of the present invention. Both of these models include a 32MB RAM and color levels of 65,536 color.

1 Further, processing software involved may be utilized and  
2 developed by any of a variety of software designers and the main  
3 executable application can include any dynamic-link library  
4 (DLL), which is a feature of the Microsoft Windows® family of  
5 operating systems. Each of the local processor assemblies 16  
6 will be downloaded with a monitoring program 20 which represents  
7 another feature in the implementation of the system and method  
8 of the present invention. As will be explained in greater  
9 detail hereinafter the monitoring program 20 includes a  
10 plurality of specifically designed applications to facilitate  
11 the review and maintenance of various performance and  
12 operational parameters conducted by each of the fast food sites  
13 on a daily or other periodic basis.

14 With reference to Figures 1 and 2, downloading of the  
15 monitoring program 20 is schematically represented as 20 and may  
16 be accomplished by means of a host computer 22, also located at  
17 each of the plurality of food service sites 12. Accordingly, a  
18 system may comprise as processing components, the use of the  
19 local processor assembly 16 and the host computer 22, which may  
20 be in the form of a conventional desk top PC. Applicable  
21 collected or stored data can eventually be transferred to a  
22 central control facility 14, which may be in the form of a  
23 processing center 24 associated with the owner/controller.  
24 Communication between the plurality of sites 12 and the control  
25 facility 24 can be by means of the Internet, which will also be



1 explained in greater detail hereinafter. It is also important  
2 to note that each of the processor assemblies 16 contain a  
3 display in the form of a visually observable display screen 26.

4 In addition, each assembly includes sufficient memory  
5 and/or database storage facilities as indicated in Figure 2 and  
6 at least one but preferably a plurality of input facilities.  
7 The input facilities may include a manual entry in the form of  
8 a touch sensitive keypad communicated to the user on the display  
9 screen 26 and operable by effective "finger-tap" response. In  
10 certain instances the finger-tap response may be more convenient  
11 than using probe or stylus application for manual entry. In  
12 addition, on some portable processors, a calculator function is  
13 typically available with near/full screen spread of 5x5 buttons  
14 which may be sufficient to utilize adequate finger- tap  
15 response.

16 In addition to the manual entry, as set forth above, the  
17 input facilities of the processor assembly 16 may comprise  
18 automatic entry capabilities in the form of a temperature  
19 acquisition module or "TAM". The TAM preferably comprises a  
20 probe assembly 30 which is interfaced, as at 32, for direct  
21 communication with the processor 16 and the monitoring program  
22 20. The probe assembly 30 preferably comprises a temperature  
23 sensing probe structure of the type manufactured and made  
24 commercially available by ATKINS TECHNICAL, Inc. Through its  
25 use, specific numerical data (temperature) will be determined

1 and communicated to the processor assembly 16 and thereby define  
2 the "user response", which will be evident on display 26.

3 It should be noted that while the plurality of input  
4 facilities, as set forth above, are available to the user in  
5 conducting the monitoring process, additional manual entry may  
6 be utilized. For example, when the user determines an existing  
7 temperature or other condition by reading appropriate output  
8 associated with a stove, refrigerator or other appliance, this  
9 data may also be manually entered. In such case the automatic  
10 input facility in the form of the TAM may not be needed and the  
11 user has the capability of manually entering the determined  
12 temperature, representative of the appropriate user response, in  
13 the manner set forth above.

14 Another important feature of the present invention is the  
15 inclusion of the above noted monitoring program 20 which serves  
16 to implement the system and process of the present invention.  
17 The monitoring program 20 includes a plurality of program  
18 applications which are designed to determine whether or not the  
19 performance characteristics of specific operational categories  
20 meet the required parameters, as defined by the predetermined  
21 government, industry and/or owner standards. The aforementioned  
22 "operational categories" refer to the physical facilities, and  
23 food products as well as the procedures utilized and performed  
24 on a daily or other periodic basis in the normal functioning of  
25 a food service site.

1 By way of example, and as described in greater detail  
2 hereinafter, such operational categories may include physical  
3 facilities such as the kitchen, dining area, bathrooms, storage  
4 areas, drive-thru facilities, etc. Additional physical  
5 facilities included in the aforementioned operational categories  
6 may include the various appliances, their cleanliness, operating  
7 conditions, etc. A specific operational category of concern  
8 would also be the food as it is stored, prepared and served  
9 along with the utensils, appliances and other equipment related  
10 to such service. It is also emphasized that the various  
11 examples of the operating categories set forth herein are not  
12 meant to be interpreted in a limiting sense. In particular, the  
13 operational categories may be varied to include any number of  
14 physical facilities or procedures that need be reviewed or  
15 monitored on an individual or periodic basis. Compliance with  
16 the predetermined standards of operation under which the one or  
17 more food service sites are required to operate is thereby  
18 further assured. Also, the monitoring program can be modified  
19 to the extent of effectively adding, deleting or customizing the  
20 operational categories and/or test items, corrective actions,  
21 etc. associated therewith so as to more effectively perform the  
22 required monitoring procedures at a given food service site.

23 Therefore, as described in greater detail with specific  
24 reference to Figures 3 through 15, the monitoring program 20,  
25 serves to significantly implement the system and process of the

1 present invention. Accordingly, the monitoring program includes  
2 a task application comprising a plurality of tasks each relating  
3 to one or more of the aforementioned operational categories.  
4 Each of the tasks comprise at least one but more typically, a  
5 plurality of user interactive test items requiring some type of  
6 act or performance of the user. The test items and acts of the  
7 user are designed to determine whether or not the various  
8 physical facilities, appliances, etc. as well as the procedures  
9 used in the functioning of the food service site, meet the  
10 aforementioned performance parameters mandated by the  
11 predetermined standards.

12 The various test items may be considered the most dynamic  
13 components of the monitoring program in that they will normally  
14 require the user to provide one or more specific "user  
15 responses". The user response provides a direct indication as  
16 to the actual or existing conditions of the food service site  
17 being monitored, as well as indicating that the user has  
18 attended to the particular task associated with a given test  
19 item. The user response will be entered into the memory  
20 capabilities of the local processor assembly 16 and at least  
21 initially stored therein for eventual transfer and future  
22 processing.

23 The user responses will be collected and result in the  
24 establishment of the result records which are eventually  
25 transferred for processing to the process center or central

1 control facility 24 of the owner/controller 14. More  
2 specifically, the result records are derived from data entries  
3 of the user responses which have been entered into the date base  
4 of the individual processor assemblies 16 by means of the  
5 plurality of input facilities as set forth above. In addition,  
6 the result records are also derived from data which may be  
7 obtained by the user performing an indicated corrective action  
8 in the event that the existing condition of the test items being  
9 monitored are non-compliant with the parameters of the  
10 predetermined standard.

11 The corrective actions may be defined as an additional  
12 corrective application of the monitoring program and are evident  
13 to the user on the display 26 of the corresponding processor  
14 assembly 16. The corrective actions may vary in number and  
15 further suggest tasks that may require a supplementary user  
16 response. The supplementary user response is made in order to  
17 verify that the corrective action and/or the task associated  
18 therewith has in fact been performed. As will be further  
19 evident the receipt or input of a user response which is non-  
20 compliant may result in a plurality of corrective actions being  
21 suggested. The user therefore decides which of the suggested or  
22 required corrective actions is best applicable for the  
23 situation. The ultimate goal in the issuing and performance of  
24 a corrective action is the correcting of the existing conditions  
25 being monitored so as to eventually conform to the operational

1 or performance parameters defined by the predetermined  
2 standards.

3 Another important feature of the present invention is the  
4 ability of the monitoring program 20 to recognize existing  
5 conditions which may be technically in compliance with  
6 government standards or other regulatory requirements under  
7 which a food service site operates. More specifically, in one  
8 preferred embodiment of the present invention the  
9 owner/controller standards are designed and structured to  
10 establish existing conditions which are unacceptable even though  
11 they meet or are in compliance with the government standards.  
12 By way of example only, existing standards mandate that the  
13 minimum internal temperature for a cooked hamburger is 157  
14 degrees Fahrenheit in order to be safe for consumption.  
15 However, because separate conditions may exist, attributable  
16 either to a failure of the personnel at a given food service  
17 site or to a malfunctioning of the cooking appliance, the user  
18 may determine that the actual temperature of the hamburger is  
19 well in excess of the minimum 157 degrees Fahrenheit.  
20 Therefore, while the "overcooked" hamburger may very well comply  
21 with the government standards, as a practical matter it is un-  
22 acceptable for presentation to the consuming public.

23 Accordingly, the predetermined standards incorporated  
24 within the subject monitoring system and process also include  
25 owner/controller standards which "exceed" the government

standards by recognizing existing conditions which meet government standards but are unacceptable because of practical or other operational considerations. In addition, depending upon the particular operational category or test items under review, specific corrective actions may or may not be issued to the user under such conditions. It is also to be noted that the owner/controller standards which go beyond the minimum government standards, in the manner generally set forth above, can relate to a variety of different operational categories and are not limited exclusively to the quality control of food.

The monitoring program further comprises additional applications including a scheduling/timing application. Each application is designed to assure that all of the operational categories are in fact monitored. Assurance of user performance of all the required test items may therefore best be accomplished by scheduling performance or review of the test items on a regular, periodic basis and at specific times. By way of example only, cleanliness conditions and adequate supplies of the bathroom may be scheduled to be conducted periodically throughout the business day.

Cooperatively, the monitoring program may also include an alert application which notifies the user if an operational category and/or any of the tasks associated therewith, including the individualized test items, have not been conducted or have not been conducted in timely fashion in accordance with the

1 scheduling/timing application as set forth above. Further and  
2 also by way of example, the user will be notified and the result  
3 records will indicate if certain operational categories,  
4 required tasks and detailed test items are consistently deleted  
5 from the daily monitoring procedure or are otherwise  
6 consistently or periodically late in their performance.  
7 Communication of the alert application to the user or other  
8 authorized personnel may be by means of a visual display on the  
9 display 26 of the corresponding local processor assembly 16 or  
10 by any other visual or audible indication which may be a  
11 somewhat conventional part of the PDA or other type of portable  
12 processor assembly 16.

13 With reference to Figures 3 through 15, the system and  
14 accompanying process will be activated by appropriate start  
15 procedures 40 utilizing conventional hardware activation  
16 components associated with the PDA or local, portable processor  
17 assembly 16. When started the display 26 of the processor 16  
18 will be occupied, as indicated in Figure 4, so as to initially  
19 present the basic identifying characteristics in terms of  
20 proprietor, notices, messages, pending duties or tasks. During  
21 installation, activation of the monitoring program 20 can be  
22 activated using a manual hot key of the processor assembly 16.  
23 The monitoring program 20 is allowed to start with a single  
24 finger-tap, response rather than utilizing the stylist  
25 associated with the PDA to navigate through the various



1 applications of the monitoring program.

2 As represented in Figures 4 through 15 each of the displays  
3 can be full screen in order to provide a clear visual  
4 communication as well as additional space for the manual entry  
5 of finger-tap contact of any user response buttons or the  
6 electronically displayed keypad. In addition and as part of the  
7 input facilities, a user may be requested to provide numeric  
8 input, other than through the automatic entry associated with  
9 the probe assembly 30. In such an event a button may be  
10 available through on-screen display that will activate a pop-up  
11 or drop down menu for additional data entry. As with all of the  
12 user response entries or other entry of numerical or specific  
13 data, the display keypad will be large enough to accommodate  
14 finger-tap response and will comprise a common numeric keypad  
15 display. In addition "clear" and "entry" keys associated with  
16 the processor assembly 16 may be used.

17 With reference to Figure 3, the system and process next  
18 involves a registering or acknowledgment of the user, as at 42.  
19 As such, the window of Figure 5 will occupy the display 26  
20 allowing the user to accomplish personal identification as at 44  
21 as well as selecting a preferred language as at 46. A user list  
22 may be stored in the data base of the processor 16 and each of  
23 the user's identifying name or other identification source may  
24 be associated with a preferred language rather than requiring  
25 the user to select a language each time he or she registers.

1 A login key will be provided in the identifying window of  
2 Figure 5 and when activated by finger-tap response, a home or  
3 login screen, as demonstrated in Figure 6, will occupy the  
4 display 26 of the corresponding processor assembly 16 and  
5 indicated as 48 in Figure 3. The home or login screen will  
6 display various informative data including personnel present on  
7 an existing shift, probe calibration condition and site  
8 designation. In addition, alert notices as at 50 may be  
9 provided to indicate to the user or other personnel various  
10 messages relevant to the daily or routine operation of the food  
11 service site or a variety of other conditions, which currently  
12 exist or which may require attention in the future. More  
13 specifically, activation of the site indicator as at 52 will  
14 cause display of the various food service site and/or their  
15 location such as when a plurality of food service site 12 are  
16 operating under an identical monitoring program and are  
17 otherwise networked into a common field of operation.

18 The site screen or window as represented in Figure 7 allows  
19 the user to choose the specific site at which he/she is  
20 operating the monitoring procedures. Naturally, the site screen  
21 may not be applicable for a single food service site operation  
22 or where there is no operational network involved with a  
23 plurality of sites. The user may then activate the home  
24 indicator or button and return to the home window of Figure 6.

25 When returned to the home window of Figure 6, activation of

1 probe calibration procedures may be accomplished to ensure that  
2 the probe assembly 30 of the TAM is in fact properly calibrated  
3 and ready for immediate use. When such occurs and upon a need  
4 only basis, the probe calibration window demonstrated in Figure  
5 8 will be evident on the screen 26, allowing for the user to  
6 perform a calibration check. Subsequently, return to the home  
7 screen of Figure 6 occurs to begin the process of performing the  
8 various monitoring applications associated with the monitoring  
9 program 20.

10 Subsequent to the review and calibration of the probe  
11 assembly 30 as at 54 and 56 of Figure 3, and upon the user  
12 returning to the home screen of Figure 6, the user is ready to  
13 select a first operational category or a plurality of  
14 operational categories to be sequentially monitored. With  
15 reference to Figure 9 the operational category screen will be  
16 evident on display 26 and include a plurality of individual  
17 categories such as deliveries, freezer check, grill check, etc.  
18 Naturally a much larger number of operational categories will  
19 normally be included in conducting the complete monitoring  
20 process. However, at any given time of day a lesser number of  
21 operational categories may be indicated for performance check or  
22 review as indicated. The user reviews the display list of  
23 operational categories and chooses individual ones thereof by  
24 any type of manual entry such as finger-tap entry.

25 Once highlighted or indicated the particular operational

1 category, such as "deliveries" will be activated upon the  
2 indication button "run test" being touched by the user. As set  
3 forth above and as further indicated in Figures 9 through 15,  
4 the various operational categories 60, in addition to those  
5 disclosed in Figure 9, may include monitoring procedures  
6 associated with the bathroom as at 62, drive thru facilities 64,  
7 counter supplies and conditions, as at 66, and the grill or  
8 other cooking appliances, as at 68. Also, and as explained  
9 hereinafter the dining area 70 may also be included as one of  
10 the operational categories presented for choice and performance  
11 of the pre-established monitoring procedures.

12 As initially demonstrated in Figures 10 and 11 and as set  
13 forth above, selection of any of the operational categories 62,  
14 64, 66, 68, 70 etc. results in a "test block" screen being  
15 evident on display 26. With specific reference to Figure 10,  
16 the operational category being monitored is indicated as  
17 bathrooms and the task application defining an operative portion  
18 of the monitoring program will present to the user a plurality  
19 of test items. The test items may be in the form of declaratory  
20 or instructive type statements and/or in the form of test  
21 questions. In either form the test item will normally require  
22 interactive performance by the user to make sure that all the  
23 monitoring procedures are followed thereby determining the state  
24 of the actual or existing conditions relating to each of the  
25 operational categories being monitored.

1 By way of example, and with continuing reference to Figure  
2 10 the user, following the test item instructions, will proceed  
3 to the bathroom for inspection. Determination if appropriate  
4 personnel has previously checked the bathrooms for various  
5 conditions such as cleanliness, supplies, etc. will be made as  
6 well as whether the "out of service" sign has been displayed  
7 until any inspection is complete. The user may further proceed  
8 with other actions such as determining if in fact the bathrooms  
9 are ready for inspection, whether they are occupied or un-  
10 occupied, etc. It is again emphasized that most if not all, of  
11 the indicated test items will require a user response. The user  
12 response can be in the simplified form of a "yes" or "no" answer  
13 as provided by the appropriate indicator button. As set forth  
14 above, manual entry may be in the form of a finger-tap entry to  
15 provide the large user response.

16 With regard to Figure 3 other operational categories, such  
17 as the condition of the grill 68 or performance at a drive thru  
18 facility 66, represents other operational categories. As such,  
19 the test block screen relating to drive thru facilities (Figure  
20 11) will occupy the display 26 and communicate the appropriate  
21 test items, such as "Are the chutes ready for the  
22 burger/filet/fries clean?" Again the user response is manually  
23 entered through a finger-tap response. As set forth in Figure  
24 3 the various additional operational categories 62-68, etc. are  
25 sequentially reviewed indicating specific test items relating to

1 the operational category under review. It is again emphasized  
2 that dependent at least in part on the context of each of the  
3 test items presented, some actions or performance will be  
4 required by the user. Further, a user response at least in form  
5 of acknowledgment such as "yes" or "no" will be requested of the  
6 user to indicate that the user's attention is directed to a  
7 particular test item. Of course a user response indicating  
8 actual or existing conditions of the items or facilities under  
9 review maybe requested also.

10 With regard to Figure 13 a review of the operational  
11 category involved with the grill, cooking appliances and proper  
12 heating or cooking of the various food products is demonstrated  
13 by the appropriate window in the display 26. As such, the probe  
14 assembly 30 may be utilized to automatically determine and  
15 define each of the user responses. By way of example, the user  
16 is directed to clean the probe, and insert the probe into the  
17 center of the hamburger (or other food product) currently being  
18 prepared. The result will be an automatic user response read  
19 out in the form of a specific temperature. Further directional  
20 information or directive test items are presented to the user to  
21 assure that the probe assembly 30 is properly utilized. Once  
22 the probe structure associated with assembly 30 is properly  
23 inserted and stabilized, as required, the "auto" indication can  
24 be activated resulting in the user response being defined as a  
25 numerical data, such as 160 degrees Fahrenheit. Alternatively,

1 the cooking temperature of the grill may be readily available by  
2 reading appropriate metering devices associated with the grill  
3 in conventional fashion. Utilization of the probe TAM comprising  
4 assembly 30 and in particular the temperature sensing probe  
5 associated therewith, is not required under such circumstances.

6 It is recognized that in the course of conducting the  
7 monitoring procedures of the system and process of the present  
8 invention, operating performance, quality control and currently  
9 existing conditions will be discovered that are not in  
10 compliance with the performance parameters as defined by the  
11 predetermined standards. In such situations the monitoring  
12 system and process of the present invention assures eventual  
13 compliance through the provision of a corrective application  
14 associated with the monitoring program 20. With reference to  
15 Figures 14 and 15, and using as an example the operational  
16 category of the dining area 70, the associated task application  
17 will present on display 26 the appropriate window shown in  
18 Figure 14. Various test items presented may for example include:  
19 "What is the condition of the dining tables?" At least one but  
20 normally a plurality of user responses will be concurrently  
21 displayed on the test block screen relating to the operational  
22 category of dining hall. These user responses will be  
23 appropriate to all of the applicable conditions that may exist,  
24 such as relating to the dining room tables. If after the user  
25 performs an inspection of the tables, they are found to be in

1 good to excellent condition, the appropriate on screen indicator  
2 button will be indicated by finger-tap entry or the like. This  
3 user response as processed by the monitoring program will be  
4 found to be within the acceptable performance parameters that  
5 the predetermined standards requires. However, if upon  
6 inspection the user provides a "poor to fair" user response the  
7 monitoring program will then activate the corrective application  
8 resulting in the communication of the window of Figure 15 on the  
9 display 26. The corrective application comprises a plurality of  
10 correlated corrective actions to be performed or conducted by  
11 the user in order to correct the non-compliant existing  
12 conditions which have been discovered. Again by way of example,  
13 the plurality of suggested corrective actions include "alert the  
14 staff", "clean the floor", "clean the tables", etc. If the user  
15 finds that other actions are required, he/she indicates or  
16 records what the actions are, such as by manual entry using the  
17 or other facilities of the processor 16. The user then performs  
18 the corrective action indicated.

19 It is again emphasized that an important feature of the  
20 present invention is the creation of the result records as at 74  
21 so as to provide a full and complete evaluation of the  
22 performance parameters of any one or more food service sites 12  
23 being monitored throughout the entire system 10 as demonstrated  
24 in Figure 1. It is also emphasized that the importance of the  
25 result records are based on the fact that they are derived from



1 data entries comprised of the plurality of user responses, as  
2 well as corrective action performed by the user. Accordingly,  
3 it is important that in many instances the corrective action 72  
4 be followed by a supplementary user response 74 (see Figure 3).  
5 The supplementary user response indicates the specific  
6 corrective action taken and/or a rechecking as to the new  
7 conditions existing subsequent to taking any related corrective  
8 action. For example, a review of the temperature at which a  
9 hamburger or other food product is being cooked may initially  
10 indicate that it is below standards. Adjustment of the  
11 appliance, cooking time, etc. representing the corrective  
12 actions will hopefully result in all other food products being  
13 cooked at the will therefore be an important part of the  
14 formulation of the result records along with the various user  
15 responses, corrective actions taken and results of the  
16 corrective actions, as set forth above.

17 The result records once formulated and as initially stored  
18 in the data base of the processor 16 is eventually communicated  
19 to the owner/controller 14 and/or more specifically to the  
20 central control facility which, as set forth above, may be  
21 represented by a processing center, as at 24 in Figure 1.  
22 Downloading of the result records, and other appropriate data  
23 can first be accomplished from the processor 16 to the host  
24 computer 22 located at the individual food service site 12.  
25 Complete data transfer of the result records and other

1 information could be accomplished by a variety of conventional  
2 communication facilities, including the Internet, which  
3 establishes an appropriate communication link between the  
4 individual host computers 22 and the central control center and  
5 associated process center 24. Alternatively, modern  
6 technological advancements in the computer sciences, including  
7 both hardware and software, can also allow data communication or  
8 transfer of the result records directly from the individual  
9 processor 16 such as by wireless application protocol (WAP) if  
10 the individual PDA or like processor 16 incorporate WAP  
11 capabilities.

12 In any event the result records are transferred to the  
13 control center 24 and stored and further processed so as to  
14 provide effective evidence of a consistent pattern of compliance  
15 with the predetermined standards or other regulatory  
16 requirements under which the plurality of food service outlets  
17 12 are required to operate. The processing of the result  
18 records further includes making them available in document or  
19 hard copy form when required, such as in response to the  
20 government derived standards.

21 In addition to the above, in order to provide clear  
22 evidence of a pattern of compliance, the system and process of  
23 the present invention and in particular the monitoring program  
24 associated therewith incorporates the additional scheduling or  
25 timing application. This application first serves to schedule

1 the performance of the various tasks and the individual test  
2 items associated therewith. Therefore such tasks are scheduled  
3 to be performed a certain number of times during the working day  
4 and even at specific times. In addition, in order to assure  
5 compliance as well as further verify the reliability in the  
6 formulated result records, each of a number of entries, such as  
7 user responses manually or automatically entered using the input  
8 facilities of the processor assembly 16 are date and time  
9 "stamped". Applied date and time stamping will therefore  
10 provide a clear indication as to the time and date, the number  
11 of occurrences a given test item was performed, the user  
12 response provided and any corrective action and/or supplementary  
13 user response needed to bring the actual or existing conditions  
14 of a given operational category into clear compliance with the  
15 performance parameters defined by the predetermined standards.  
16 Also, it may be desirable to schedule certain ones of the user  
17 performed tasks, as well as the individualized test items  
18 associated therewith in a sequential order of performance for  
19 purposes of better utilizing the time of the user or other  
20 personnel of the site.

21 In order to assure performance of the user tasks as defined  
22 by the task application of the monitoring program and to provide  
23 an even more specific evaluation as to whether or not all of the  
24 operational categories are being properly reviewed, the  
25 monitoring program incorporates an alert application. The alert

1 application will provide some type of visual and/or audible  
2 indication or alert, to the user or other authorized personnel,  
3 as to the non-occurrence of a scheduled task or of one or more  
4 of the test items. Alternatively, an alert or indication will  
5 be provided to the user or other supervisory personnel when one  
6 or more of the test items are consistently or periodically  
7 performed on an untimely basis in order that the various tasks  
8 may be re-scheduled for a different time of day or alternatively  
9 the personnel involved in the required task and test item be  
10 advised as to the continuous untimely nature of the monitoring  
11 procedures being performed.

12 Since many modifications, variations and changes in detail  
13 can be made to the described preferred embodiment of the  
14 invention, it is intended that all matters in the foregoing  
15 description and shown in the accompanying drawings be  
16 interpreted as illustrative and not in a limiting sense. Thus,  
17 the scope of the invention should be determined by the appended  
18 claims and their legal equivalents.

19 Now that the invention has been described,